Attorney's Docket No. <u>1749/261</u>   <u>PATENT</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Stephen Creaney; Richard John Ferguson; Philip Lane; Thomas Crummey
Appl No.: 09/437,004
Filed: November 9, 1999   Group Art Unit 2734
For: "Data Communications Link"

Assistant Commissioner for Patents   January 13, 2000
Washington, DC 20231

SUBMITTAL OF FORMAL DRAWINGS

Sir:

Enclosed herewith is one set (six sheets) of formal drawings. It is requested that these drawings be substituted for the originally filed informal drawings.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Box Missing Parts, Assistant Commissioner for Patents, Washington, DC 20231, on January 13, 2000.
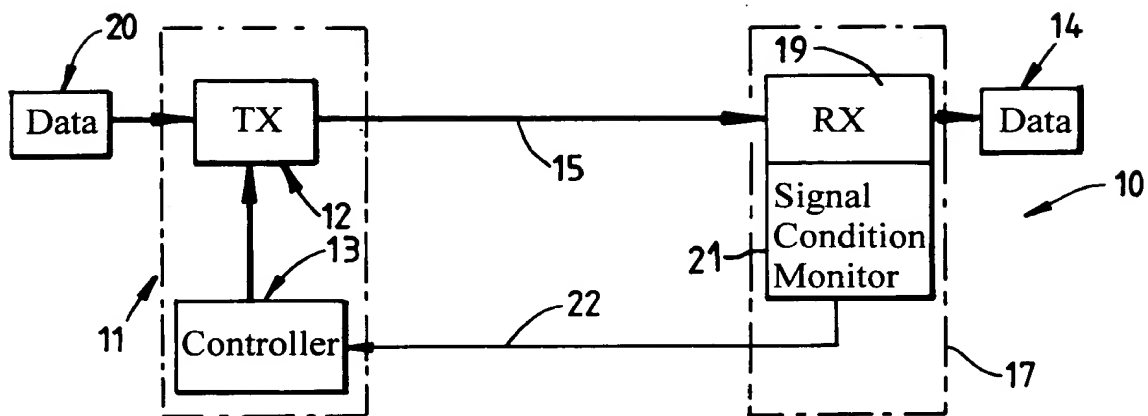
Samuel G. Layton, Jr.

CLT01/4400012v1

Fig. 1

Fig. 2

Note:
R3 = 2 × R6 = 4 × R9

Fig. 3

Fig. 4

Flat Panel Unit

34

32

31

Graphics Adapter

PC System Unit

30

Fig. 5

ALPHA IS MULTI-LEVEL Tx / BINARY Rx, BETA IS MULTI-LEVEL Rx / BINARY Tx
UP/*DOWN_MIN IS A CONTROL SIGNAL USED TO INCREASE OR DECREASE THE
ALPHA LASER BIAS DRIVE CURRENT

INITIAL SIGNAL STATES: UP/*DOWN_MIN='1'TO'0'(INITIATES MIN_CAL_ALPHA)
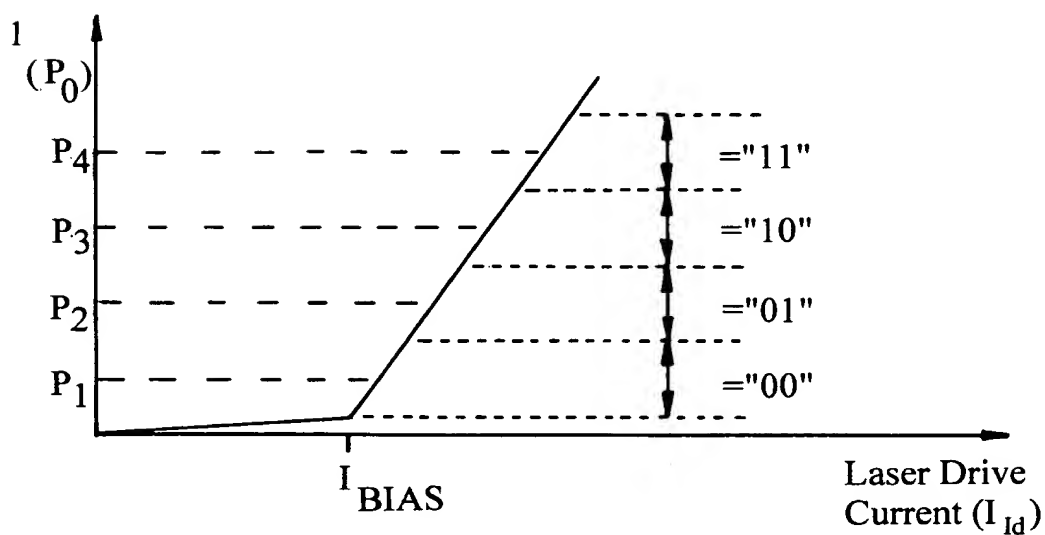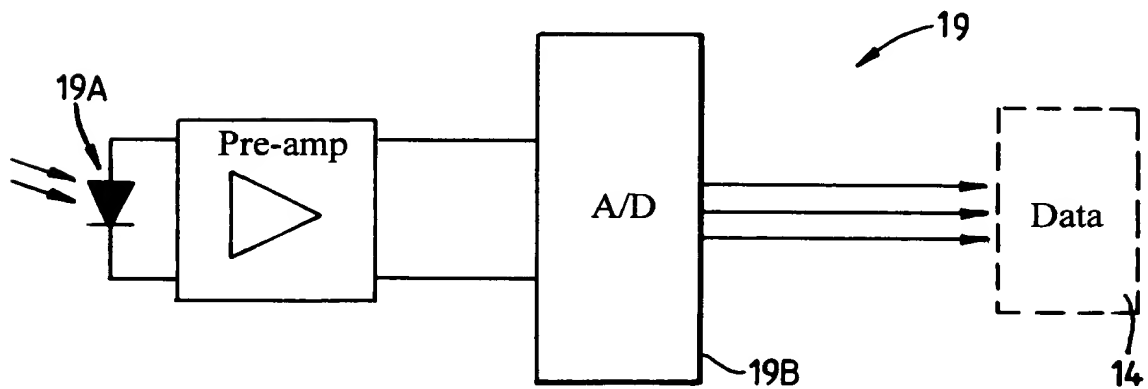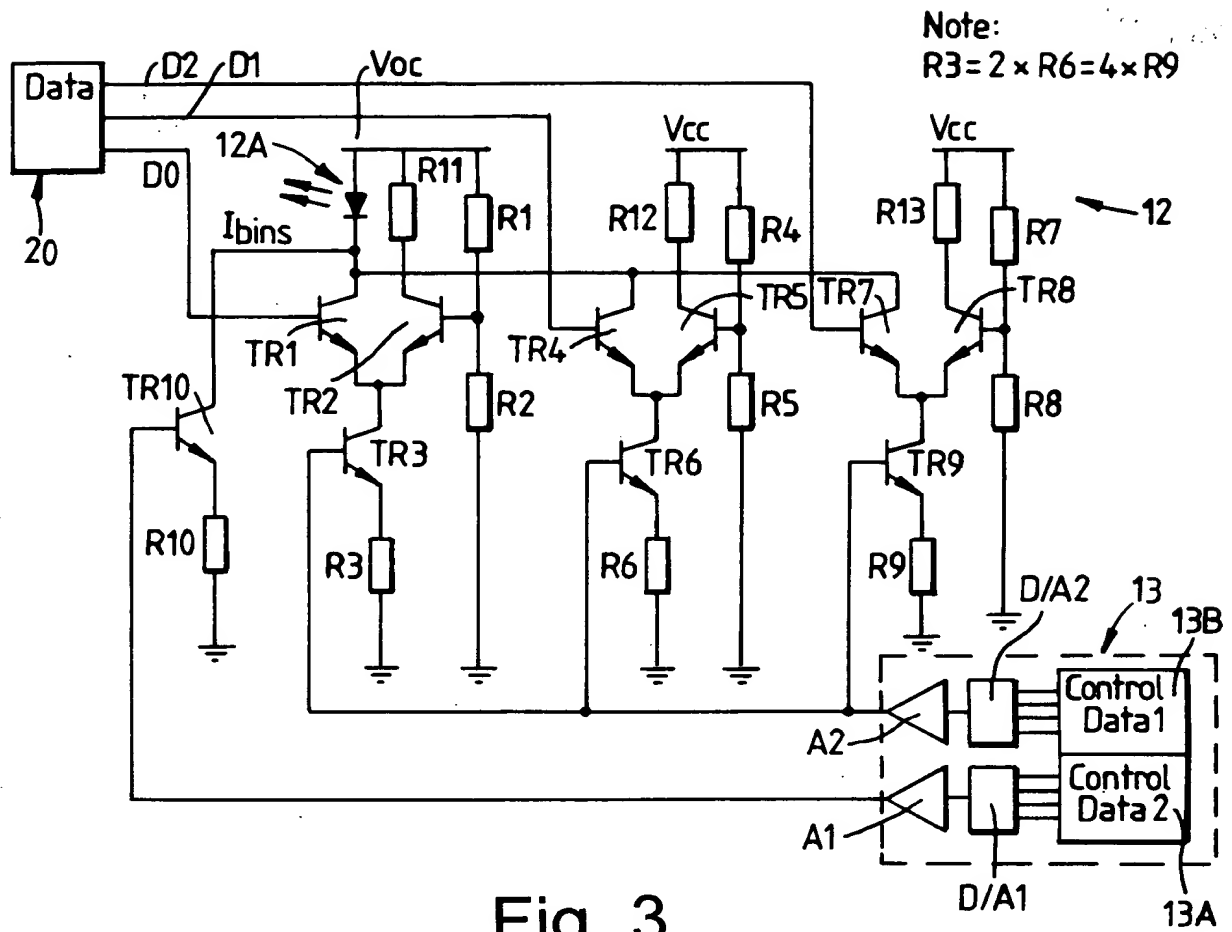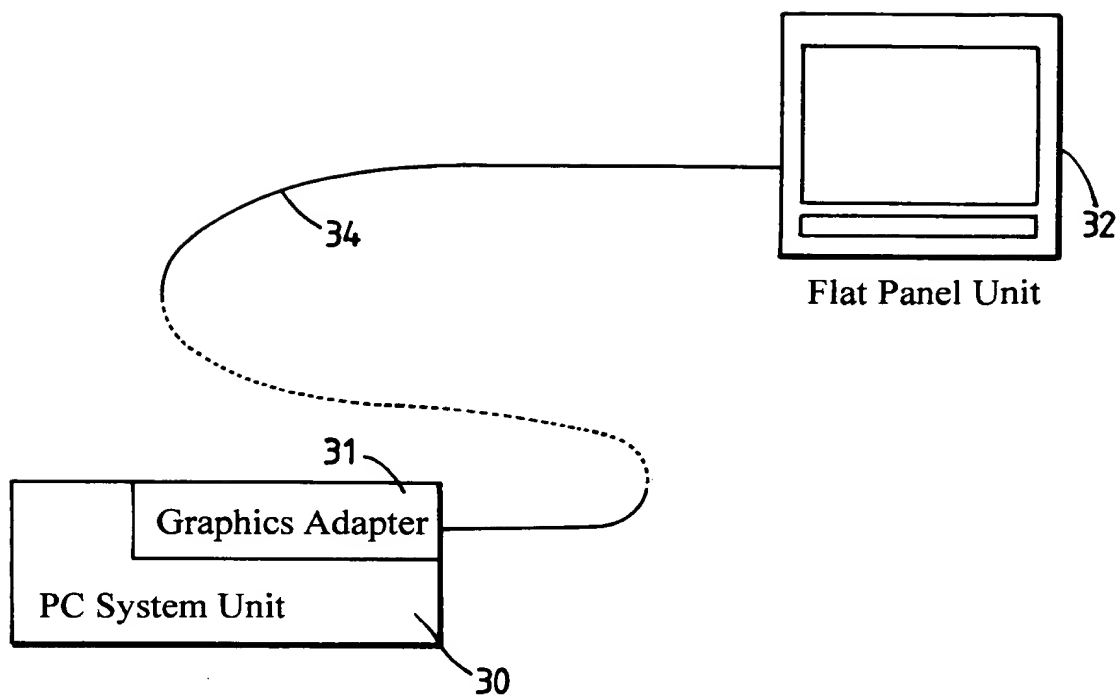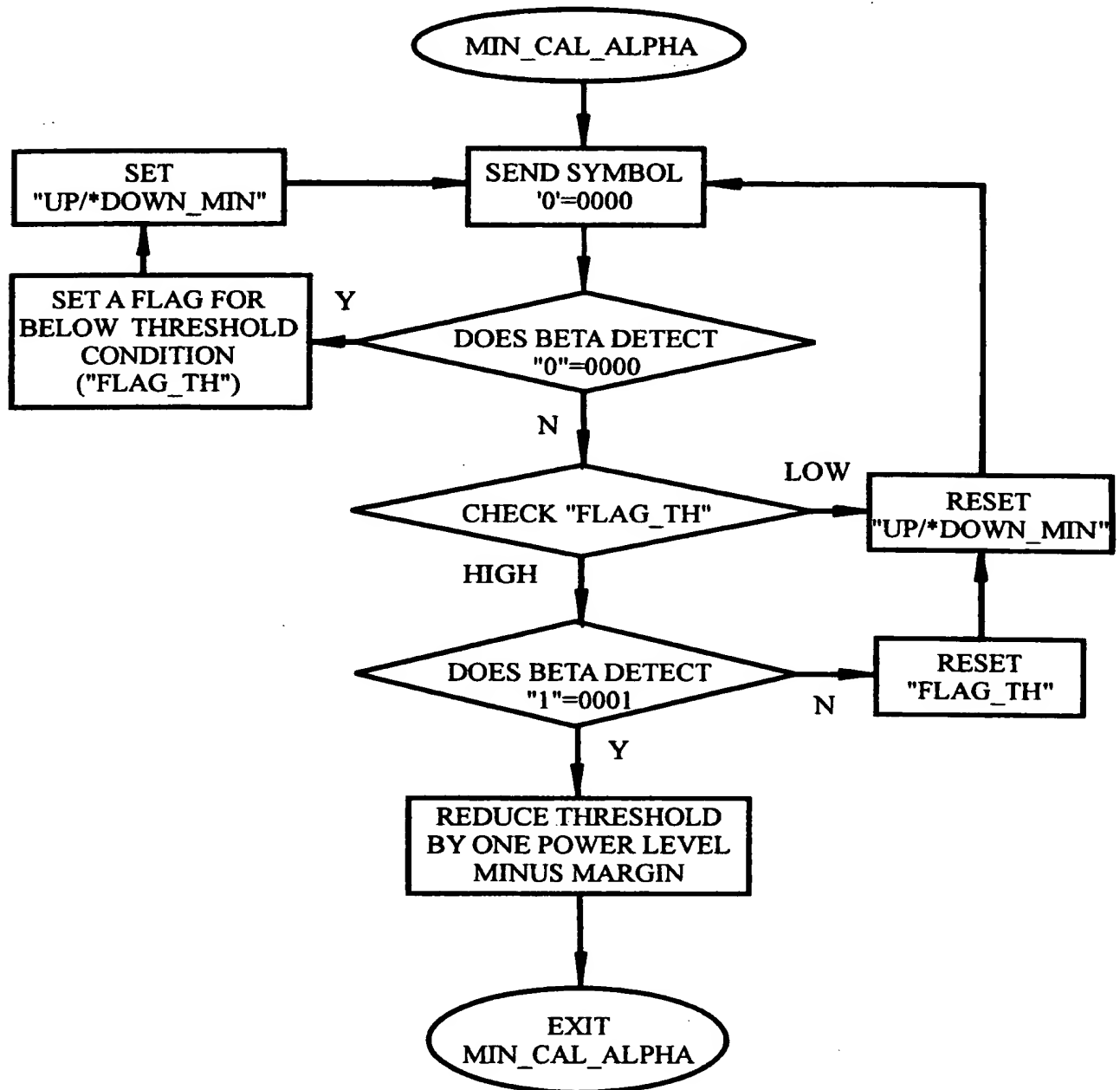

Fig. 6A

ALPHA IS MULTI-LEVEL Tx / BINARY Rx, BETA IS MULTI-LEVEL Rx / BINARY Tx
UP/*DOWN_MAX IS A CONTROL SIGNAL USED TO INCREASE OR DECREASE THE ALPHA
LASER MODULATION DRIVE CURRENT

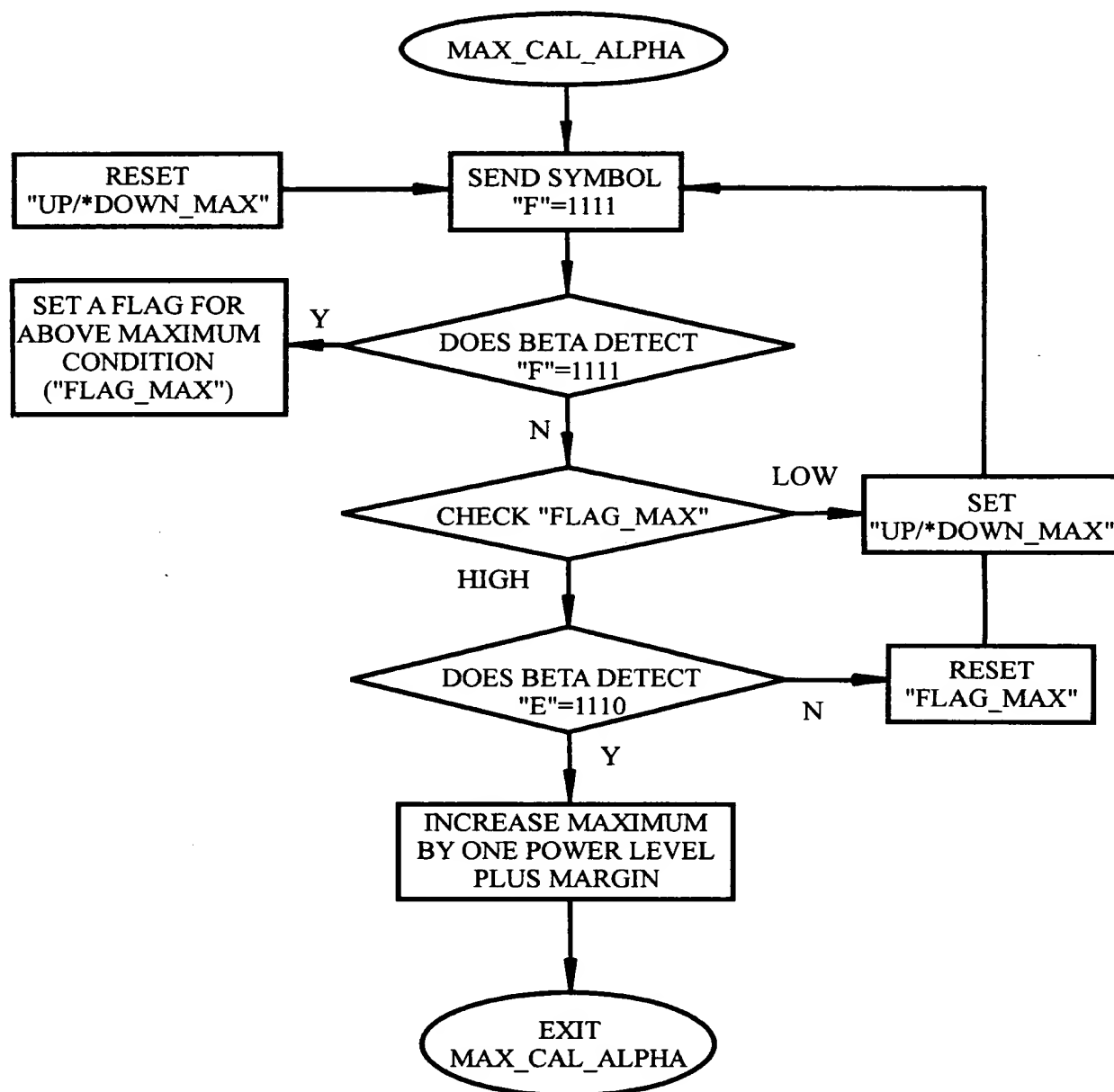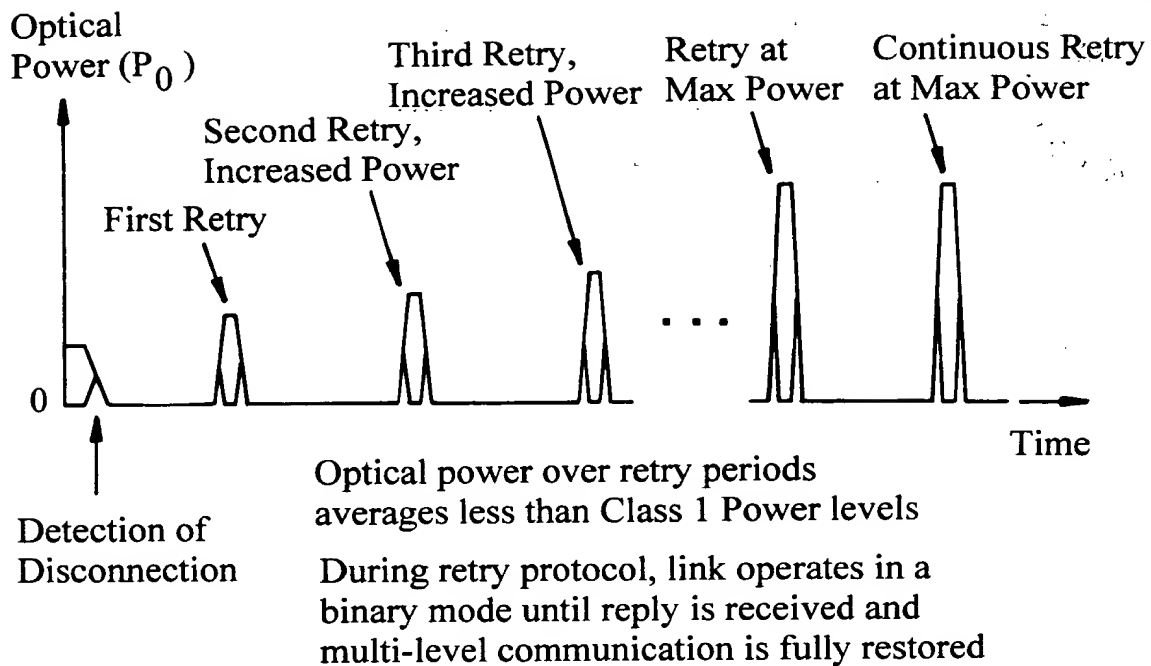INITIAL SIGNAL STATES: UP/*DOWN_MAX='0' TO '1' (INITIATES MAX_CAL_ALPHA)

```
                          ┌──────────────────┐
                          │  MAX_CAL_ALPHA   │
                          └──────────────────┘
                                   │
                                   ▼
   ┌──────────────────┐   ┌──────────────────┐
   │     RESET        │──▶│   SEND SYMBOL    │◀────────────┐
   │ "UP/*DOWN_MAX"   │   │    "F"=1111      │             │
   └──────────────────┘   └──────────────────┘             │
                                   │                        │
   ┌──────────────────┐           ▼                        │
   │ SET A FLAG FOR   │  Y  ╱────────────────╲             │
   │ABOVE MAXIMUM     │◀────  DOES BETA DETECT ╲            │
   │ CONDITION        │     ╲    "F"=1111      ╱            │
   │ ("FLAG_MAX")     │      ╲────────────────╱             │
   └──────────────────┘           │ N                      │
                                   ▼                        │
                          ╱────────────────╲  LOW  ┌─────────────────┐
                          ╲ CHECK "FLAG_MAX"  ─────▶│      SET        │
                          ╱────────────────╱        │ "UP/*DOWN_MAX"  │
                                   │ HIGH            └─────────────────┘
                                   ▼
                          ╱────────────────╲        ┌─────────────────┐
                          ╲ DOES BETA DETECT ───────▶│     RESET       │
                          ╱    "E"=1110      ╲   N   │  "FLAG_MAX"     │
                           ╲────────────────╱        └─────────────────┘
                                   │ Y
                                   ▼
                          ┌──────────────────┐
                          │ INCREASE MAXIMUM │
                          │ BY ONE POWER LEVEL│
                          │  PLUS MARGIN     │
                          └──────────────────┘
                                   │
                                   ▼
                          ┌──────────────────┐
                          │      EXIT        │
                          │  MAX_CAL_ALPHA   │
                          └──────────────────┘
```

Fig. 6B

Optical
Power (P_0)

First Retry

Second Retry,
Increased Power

Third Retry,
Increased Power

Retry at
Max Power

Continuous Retry
at Max Power

0

· · ·

Time

Detection of
Disconnection

Optical power over retry periods
averages less than Class 1 Power levels

During retry protocol, link operates in a
binary mode until reply is received and
multi-level communication is fully restored

Fig. 7

12A

42

80X

15

40

41   19   22

Fig. 8